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ABSTRACT

The data and analyses presented in this paper were the result of an 18-month study of a university-community-agency partnership. The purpose of the project was to develop the community's capacity to own and operate a community center that would provide a wide range of services and respond to the future needs of the community. The university team provided technical assistance to an inner city community council. The focus of this research was on the interaction among the university team members, faculty, staff, and graduate students who represented multiple disciplines. Several themes emerged from the study and an interdisciplinary collaboration model was developed to capture the complexity of the activity. The group activity moved through stages classified as: (1) dominant/expert/individual; (2) parallel/coordinated/group; and (3) integrative/collaborative/team. The discussion focuses on the intellectual challenges of interdisciplinary collaboration and the institutional challenges of and strategies for supporting such collaborative engagement. Observations and data analysis resulted in the development of a model of three dimensions of team development and growth: disciplinary orientation, knowledge engagement, and work orientation. (Contains 23 references.) (SLD)

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Interdisciplinary Collaboration and Academic Work

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Interdisciplinary Collaboration and Academic Work

In the complex arena of postsecondary education, we hear calls for increased interdisciplinary collaboration. "Because knowledge arises within social contexts and in multiple forms, the key to increasing knowledge lies in the effort to extends one's limited perspective (Bartlett, 1990, p. 882, cited in Bensimon and Neumann, 1992)." Critics suggest cross-unit relationships and multidisciplinary thinking are required to address the kinds of problems facing higher education into the future, implying that the more narrow lenses of single disciplinary orientations do not fully lend themselves to complex issues. Unfortunately, critics do not provide as much insight into how such collaborative arrangements are developed or sustained. Despite an impressive accumulation of experience and case study, it remains unclear which variables are most likely to produce success in collaborations (Sandmann & Flynn, 1997). What is known is that organizational unit functioning, culture, norms, values and reward structures significantly impact what work gets done, the designs through which work is accomplished and who participates (Blackburn & Lawrence, 1995; Bolman & Deal, 1997; Fairweather, 1996; Mattesich & Monsey, 1992; Oborn & Shipley, 1995; Trubowitz & Longo, 1997). It is less clear how universities more effectively cultivate and support interdisciplinary collaboration or the process through which faculty and staff travel in enacting this form of work.

An ideal model and process would successfully integrate competing perspectives, develop a shared sense of power and change among all participants, and demonstrate a leadership role that was well-defined and replicable (Sandmann & Flynn, 1997). In actuality, most collaborative processes are often characterized by dominance of a single disciplinary change paradigm, mixed perceptions of improvement or goal attainment, and poorly resolved group tension. Leadership styles in interdisciplinary groups are particularly ill understood, and therefore, were a primary focus of this research. The data and analyses presented in this paper are the result of an 18-month study of one attempt to create effective interdisciplinary collaboration, in this case, a university-community-agency partnership. The study yielded results that have applicability in other settings and from which a conceptual model of interdisciplinary collaboration was posited.

The Concept of Collaboration

Before proceeding further, it is necessary to discuss what we do know about collaboration and draw a clear distinction between our concept of collaboration and the more commonly used concept of cooperation. The literature has defined collaboration in many ways and from a variety of perspectives. Two perspectives, one organizational and one individual, help to demonstrate the complexity of the context in which the definitions reside. From an organizational (structural) perspective, Mattesich and Monsey (1992) define collaboration as

> a mutually beneficial and well defined relationship entered into by two or more organizations to achieve common goals. The relationship includes a commitment to: a definition of mutual relationships and goals; a jointly developed structure and shared responsibility; mutual authority and accountability for successes; and sharing of resources and rewards.

In discussing faculty work, Austin and Baldwin (1991) describe collaboration as " a cooperative endeavor that involves common goals, coordinated effort, and outcomes or products for which the collaborators share responsibility and credit (p. 5)." Perhaps Tjosvold's (1986) concept of collaboration draws both perspectives closer together. Tjosvold suggests that collaboration is "a special case of positive interdependence...of designing contexts and interactive processes in a highly conscious fashion to promote interdependence." Elements of structural relationships (task/goal interdependence, role definitions, organizational culture rewards, systems of accountability and conflict resolution) and psychological aspects (individual beliefs, values assumptions and styles) must be taken into account. In our concept of collaboration, both the individual and organizational perspectives are equally important.

We envision interdisciplinary collaboration as integrative thinking where new knowledge is created from the merging of interdisciplinary perspectives. Members of the interdisciplinary collaboration feel ownership for the team, its direction, decision making, and feel accountability to each other. Participants in an interdisciplinary collaboration are motivated by the collegial discourse and learning opportunities leading to the creation of new knowledge. While we expand on our use of the term later in the description of an

interdisciplinary collaboration model, it is important at this point to more fully discriminate between collaboration and cooperation.

Austin and Baldwin (1991) distinguish collaboration from cooperation by noting that collaboration is the narrower term. "Collaboration requires a great deal of cooperation, but the final objectives of the two activities differ somewhat. Individuals who cooperate often reach some agreement but proceed individually toward self determined goals. People who collaborate work closely together and share mutual responsibility for their joint endeavor" (p. 4). Organizationally, Doan (1995) characterizes a cooperation model as two organizations that arrive at a common ground, but their efforts do not advance any further. We should note that coordination is a term often used interchangeably with the term cooperation. Individuals or organizations can coordinate resources and efforts, yet have no interdependent relationship or responsibility. Both coordination and cooperation are necessary elements of collaboration.

The literature is replete with the characteristics of successful collaborations. Most writers would agree that a successful collaboration requires trust, mutual respect, shared vision, time, open and frequent communication, and flexibility (Mattesich and Monsey, 1992; Oborn and Shipley, 1995; Trubowitz and Longo 1997). Collaborations require a lot of time to develop and deliver (Doan, 1995, Krasnow, 1997). Collaboration must be seen as an investment, one beyond the mere completion of a required set of tasks. Members of the collaborative must develop trust and respect for each other in order to foster an atmosphere of honest communication and taking risks in sharing innovative ideas. Collaborations need a strong convener, a leader who helps to set the vision, goals, roles, and tasks etc., of the members and nurture the group until an interdependent relationship emerges.

Communication is another key to successful collaborations. Members must be able to communication constantly, honestly and with respect throughout the collaboration. Active listening is another skill that the membership must have in a successful collaboration. Most members of a collaborative must learn to listen and listen to learn (Krasnow, 1997). Too often group members listen to confirm their beliefs and take issue with those that contradict those beliefs. They pause to reload, not listen. Members in a successful collaboration listen to learn, to make connections complementing their own belief system

with the ideas that other members are expressing. They are skilled in Bohm's concept of "dialogue" where all assumptions are suspended/challenged and members interact as true colleagues (Senge, 1990). Perhaps the most important characteristics of a successful collaboration are the attributes and qualities that each member brings to the group. Pick the right people to participate in the collaboration (Mattesich and Monsey, 1992).

Research Design/Methodology

The data and analyses presented in this paper were a result of an 18-month study of a university-community-agency partnership. The purpose of the project was to develop the community's capacity to own and operate a community center that would provide a wide range of services and respond to future needs of the community. The university team, which consisted of members from a number of disciplines, was contracted to provide technical assistance and training to an inner city community council. The focus of this research was on the processes of interaction among the university team members who represented multiple disciplines. Members of the team were faculty, staff and graduate students from five units at one university.

We examined the ways in which university team members developed and enacted an interdisciplinary team and the leadership issues associated with group cohesion. From this analysis, several themes emerged and an interdisciplinary collaboration model was developed to capture the complexity of the activity. Specifically, we examined the consequences for group processes, goal definition, and intervention strategies when competing paradigms exist, what leadership issues were present, and the degree of impact of university culture on successful interdisciplinary collaboration development.

A qualitative research design using grounded theory procedures and techniques was used (Strauss & Corbin, 1991). Data were collected through observations of team meetings, audio-recorded interviews with team members, analysis of project documents (i.e., minutes, memoranda, reports), and analysis of reflective papers written by team members that highlighted important decision points and other perceptions of group processes. Formal data collection began almost 11 months into the project and continued for another 6 months. At this time, all existing documents were compiled and independently reviewed by the three research team members. Analyses were compared,

initial codes generated, and preliminary themes developed. During this same period, team-meeting observations began, with at least one researcher attending regular meetings and compiling field notes.

Because none of the researchers were involved at the on-set of the project, an attempt was made to generate a form of "baseline data." Each team member was asked to construct a reflective paper capturing their thoughts and observations about the team's processes since their initial involvement in the project. Members were asked to comment on their motivation for participation, their role in the project, group processes in early meetings, sources of conflict, conflict resolution, and group strategy development. Analyses of the project documents, reflective papers and observation field notes were used in the development of an initial interview protocol. The protocol was pilot tested with one team member and revisions to wording and order of questions made accordingly. Face-to-face interviews were conducted over a two-month period with a total of nine (of ten) team members, though all were invited to participate. Interviews were transcribed verbatim from audiotapes and field notes compiled for use in analysis. Field notes were taken and used in subsequent analyses.

Preliminary analyses of the reflective papers, group process observations, and verbatim interview transcripts were conducted through open coding to identify categories, concepts, and patters (Patton, 1987; Strauss & Corbin, 1991). As in most qualitative research, analyses were on going throughout the data collection period. During the data collection process, each member of the research team independently analyzed the data sets. They met regularly during the concentrated data gathering period to discuss their observations, make preliminary coding categories and interpretations, and provide feedback into the data gathering and analyses processes. This synergistic procedure is consistent with the evolving nature of the grounded theory approach (Strauss & Corbin, 1991). Therefore, we attempted to document and analyze the emerging events of the group process in terms of how and why actions/interactions changed, remained unchanged, or regressed in relation to the project goals. Further, the process analyses sought to explain why planned actions or interactions broke down on the project, why problems emerged and why, in retrospect, the project produced growth and development, prematurely arrested or failed in goal attainment. The extent to which we were successful

in conducting these analyses was limited by the availability and nature of data collected and is described in more detail in the limitation section.

Limitations of the Study

There were a number of limitations to this study. The primary limitation was that this study of the team began eleven months into the overall project, due to various contract and research design issues. As a result, nearly eleven months of opportunity for observation and data gathering, primarily during the initial organizing and goal setting period were lost. This period was also the time when the team membership and goal setting decisions were initially made. In an attempt to reconstruct this period, the study relied on written reflections from team members, interviews and document analysis as opposed to the preferred strategy of observation.

Another limitation was the absence of consistent documentation of many key activities such as the debriefing sessions that occurred after each training session where several team members assessed the success of each session and made decisions regarding modifications for the following sessions. These data could have been illustrative of team functioning and multidisciplinary growth and development. Much of the decision making regarding team activities and conflict resolution (i.e., budget or disciplinary approach) occurred over the phone or in private sessions of team subgroups where no documentation was probable, in spite of suggestions by the team leader that records be kept. This became particularly problematic for us when trying to track the change process (action-reaction-action) and team evolution through the various stages.

Interdisciplinary Collaboration Model

The table below depicts a visual construction of the interdisciplinary collaboration model of team behavior that emanated from this study. While the dimensions of the model, in isolation, resemble findings from previous research, such as studies of team development by Tuckman (1965), Bolman and Deal (1997), and Bensimon and Neumann (1992), being able to see the complementary and simultaneous development of the team across multiple dimensions, including those affected by the organization presents a more complete and complex perspective. There are three stages that represent distinctive characteristics along the three dimensions of: Discipline Orientation, Knowledge

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Engagement, and Work Orientation. Discipline orientation refers to the discipline paradigm that guides how members view and interpret the environment and how they would address solutions to those problems. Knowledge engagement refers to how members use discipline knowledge and the role they play within the team. Work orientation refers to how each member works with other group members.

Interdisciplinary Collaboration Model

	Stage One	Stage Two	Stage Three
Discipline Orientation	Dominant	Parallel	Integrative
Knowledge Engagement	Expert	Coordinated	Collaborative
Work Orientation	Individual	Group	Team

Stage One - Dominant/Expert/ Individual: In stage one, the group was preoccupied with the tasks of group formation, role and goal clarification, task allocation and paradigm exploration. Members viewed project problems and intervention strategies through their own disciplinary lenses and behaved as though they alone had the answers. This group could be characterized as a multidisciplinary group, meaning a collection of faculty from several disciplinary perspectives who might exchange information but who function and think independent of each other. As noted by two members, "[We each] basically just had one approach [to the job]" and "We were running our own agendas". They were a collection of individuals positioning to have their disciplinary paradigm dominant over all others. They were knowledge experts inclined to work individually on tasks, so responded to the invitation to participate in the effort in a traditional way:

> [We used] a traditional response – respond to a request from a customer – a consultancy. We were brought in so we treated this as a similar event. I prepared the scope of work for the contract, laid out the tasks that needed to take place…my anticipation was that team members would be assigned to deliver those tasks. [We were] basically supposed to provide specific work to accomplish each task.

Leadership at this stage was traditional (top down) requiring visioning, decision-making and conflict resolution intervention up front. In the words of the person responsible for originating the project, her role was, "Administrative…: developing the team, invitational role [for participation and for ending participation], keeping members focused on developing the program, putting infrastructure in place, identifying resources, steering, instigating the research component so we can reflective about our work." This stage represented the traditional research/consultant approach to community interventions. One member recounted,

> The rules of the group have changed over time with the maturation of the group. At the beginning, it was a jockeying for positions, actually. People didn't know each other around the table. So who was in the group and why they are in the group and the identity of those people in the group needed to be developed, needed to be shared. And there needed to be an increased appreciation for the background and expertise that people would bring that would make them legitimate members of the group.

Critical events during stage one included a long and protracted negotiation of the contract and budget that raised issues of distrust among all stakeholders. Subsequently, when the group faced any crisis, trust was usually the first casualty and had to be reestablished. Disciplinary clashes were frequent, as proponents for the two primary disciplinary paradigms could not gain an advantage over the other. "It has been a consistent theme…of differences and viewpoints on occasion resulting in … a lot of creativity but also…in some conflict," offered one member. The clashes centered on how to work with the community and what training needed to be delivered. It took substantial time and effort before the proponents of either paradigm realized its limitations in fulfilling the real needs of the community. "We had a very complicated project with a lot of different actors involved, so we had a variety of different viewpoints that we'd have to merge together. We would try to hammer out [our different points of view] until everyone was reasonably well satisfied," suggested one team member, while another shared, "…[there were] different perspectives so clearly being articulated to a point where people weren't listening to each other. We were so tested, the tensions were so great, that civility broke down at times. There was a lot of yelling at times…"

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The clashes served as catalysts for the group to subconsciously seek an intellectual "neutral space" and allow the group to move from a dominant to a parallel operating paradigm. The move toward intellectual neutral space enabled the group to suspend the disciplinary clashes by initially talking in the third person.[1] The group began to talk about what the community would want or what was best for the community, replacing talk about "my way is the best way." "It pulled us out of one person's conceptual way of thinking or framework," offered a member. Group members also began to spend more time listening than "reloading" and more time with inquiry than advocacy (Senge, 1990), which helped to reestablish trust and respect within the group.

An intellectual neutral space seemed necessary for the multidisciplinary team to transition from stage one to stage two. It was a point where the disciplinary paradigm exploration could safely occur in the sense of Bohm's concept of dialog (Senge, 1990). Dialog takes place when members of the group suspend their disciplinary assumptions and engage in active listening. Each member listens to learn from the alternative perspectives, seeking to complement and not to contradict their own paradigmatic perspectives. Members of the group treat each other as colleagues in the ideal sense, with equally important contributions to the group. It was critical for the group to seek and find this intellectual neutral space in order for the group to transition toward an interdisciplinary group. Senge (1990) would refer to this evolution as moving from adaptive learning (confronting and responding to problems) to generative learning (creating new ways to see the world and new capacities to design the future).

Stage Two - Parallel/Coordinated/Group: Stage two was characterized by aspects of group norming, refining and coordinating work processes, leadership transition and paradigm cohesion. This was an active, task-oriented period, and group members met more frequently. Competing paradigms existed in parallel, allowing tasks to be done independently and brought back to the group for coordination and compilation. Although members remained committed to their own disciplinary orientations, many began to acknowledge that other paradigms had merit in some situations. Trust and respect among

[1]Note: The community council had adopted an approach in their deliberations they termed "guardianship." To them, guardianship meant a collective responsibility of the council to oversee and protect the assets of the community. The university team began to adopt and internalize this concept and used it as the bases for

group members grew. Through internalizing the concepts and language from outside the group's disciplinary representation, members found the intellectual neutral space that allowed them to progress toward project goals, more connected work, and early stages of team development. In some respects, the team began to behave as an interdisciplinary team as opposed to a multidisciplinary group. As one member recalls,

> [We began to talk about] which approaches seemed most salient, most useful, and what came out of that was an approach that was different than anything that was put on the table. We've changed the thinking of people. I've come to this thinking about parallel integrated development – people doing their own part in a very parallel fashion.

Members began to express opinions beyond their area of expertise. The novice team felt ownership of the process and product.

Individual voices were attended to as professional respect and acceptance began to develop within the group. Trust increased and there was less paradigm competition. "We were looking to get more academic synergy," shared one participant. Some signs of a cognitive team (Bensimon and Neumann, 1992) became evident as members began to feel collective ownership of the intellectual processes (raising issues, synthesizing, monitoring values and behaviors) and task completion. Group members began to express opinions outside of their disciplines and tasks, and one reflection of this period was characterized in this way: "We have a structure around which allows differences to come out; people are comfortable resolving them." Members began to address issues collectively and internalized the guardianship concept.

> I think one of the good things that [came] out of this project [was] actually the term guardianship. That really…was created out of the synergy of our interaction…it emerged basically…as a result of helping [each other] understand what capacity building is.

During this time, there was a group leadership transition to a person with a more facilitative and inclusive style. In describing his approach, the new leader expressed,

> I think of myself as being responsible as an enabler in the project. By that, I mean

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establishing the neutral space that eventually enabled the team to move beyond the shackles of their tightly held disciplinary lenses.

> being responsible for trying to see that the different points of view in the project are brought together and issues are identified and that they are resolved – to establish a structural process where other people can do their best work.

While the approach to leadership changed with the new leader, final authority for decision-making remained with his predecessor.

Critical events that challenged the group during stage two included the community's control of access to data collection and approval of publications emanating from the project. Such conflicts often caused the members to revisit their membership role as well as the university's partnership role. In referencing some of these clashes, one member suggested, "There was just a lack of communication. …There was still a level of distrust of what the university might do with their relationship to the community." Each crisis caused the group members to seek the decision-making and conflict resolution authority of the previous leader, indicating that they were not yet fully ready for a facilitative or servant leader (Bogue, 1994).

Stage Three - Integrative/Collaborative/ Team: It is difficult to describe completely stage three because it was not represented fully in the data, yet we hypothesize it to be the internally integrated and development of group cognition. Disciplinary paradigms moved from competing (stage one) through co-existing (stage two) to integrated in stage three. As one member saw it,

> I don't know how much of it involved predominately trying to do it as an integrative approach, but in a sense it was evolutionary. We started out as one approach being done and then for a while, we engaged in parallel play. We had a subgroup designed to bring the different points of view together. We evolved in our group process from a dominate point of view to parallel to predominately consensus, although we still have elements of all three at one time or another coming up.

Individual members did not replace their paradigmatic lenses with new ones but saw through adaptive lenses that recognized the contributions of various aspects of once competing paradigms. Said one member, "It's a nice combination, an integrated combination." In this sense, the paradigm evolution is developmental. Disciplines do not compete for dominance but look for ways in which they can complement each other as problems are further defined and resolutions are created to address those problems.

Communication, both formal and informal, increases as ideas are exchanged and recreated. Members of the team are motivated as much by the intellectual and cognitive learning of multiple perspectives as they are by successfully completing their original mission. Through dialog, new knowledge is created, and therefore, new solutions are possible. From the perspective of team members, this evolution represents fundamental change, as noted by one who says,

> I see a massive accomplishment (for the time spent) really. We really only have been working on this for a year and one-half. Given the task at hand, I think that's [group growth] extraordinary because we are dealing with actual fundamental values and beliefs of all of us that have had to change, myself included. We're dealing with a complex multi-level system change…that is, psychological levels, sociological levels, interpersonal levels, personality issues, economic issues, historical issues. It's like an onion with a thousand layers…

Active listening, reflection, and continuous learning are cornerstones of stage three. The team is highly adaptive to creating solutions and open to the free, uninhabited debate of issues. Shared values are internalized, not merely intellectualized, and act to guide the development of the team's cognitive lens. These values supplant the need for an authoritarian leadership model, as leadership can flow more freely through the team members based on the project needs. As one member shares,

> We have to redefine the nature of leadership…and by that I mean we need to evolve from a powerbased model into an enabling model. We need to evolve from control and management into empowerment, and we need to move from… a linear, "we do this and we do that, and then we do that," bulwark kind of model into a mobile where you have an evolving set of constantly changing set of relationships where you understand and view it in its entirety. We need to move more effectively from power-based relationships into reciprocal relationships.

Crises do not threaten the group and reopen old wounds but provide opportunities for the team to further develop their collective cognition (Bensimon & Neumann, 1992; Kuhnert & Lewis, 1989). All members share responsibility for their actions and collective decisions. Members have grown to fully trust and respect each other in the altruistic motivation and advancement of the team. As a result, the team is truly greater than the sum

of its parts. In a sense, the team has evolved to a transdisciplinary team where disciplinary boundaries disappear and new disciplinary perspectives, and new knowledge, are created.

Discussion and Recommendations

While this study focused on the team process and leadership issues of an interdisciplinary team in the context of a partnership with a community and a state agency, the lessons learned from this university team have implications for interdisciplinary collaboration in other university contexts. We focus first on the intellectual challenges of interdisciplinary collaborative faculty work as they emerged from the study, and then discuss institutional challenges of and strategies for supporting such collaborative engagement.

Intellectual Challenges of Interdisciplinary Collaboration

It was clear in the early stages of this research that the university team behaved in accordance to the norms to which they had been socialized and for which they were rewarded within the university and disciplinary system. This behavior is illustrated in stage one of the model (dominant/expert/individual) and the one we are most familiar with in practice. The question arises then, how do we socialize faculty to work successfully in collaborative efforts, efforts that require a different set of skills and experiences in order to be successful? Two areas of change seem particularly appropriate avenues to enhancing collaborate efforts: Training during the graduate experience and the university and disciplinary reward systems that perpetuate stage one behavior.

Graduate students are trained to be experts on the cutting edge of increasingly specialized areas within their chosen discipline. They are trained to debate and support their views. Above all, their research experience is an individual experience. Their immediate role models demonstrate and enact that experience (Nyquist, et al., 1999). These are the attributes of the disciplinary expert who views the world from the lens of a dominant paradigm, of a researcher most comfortable working alone, and a communicator who publishes his or her findings at the completion of the project. Learning is individualistic. Rewards are given for exemplary individual efforts.

These are not the attributes of successful collaborators. Perhaps graduate students would be better served to also learn how to listen to learn, to recognize the weakness in their disciplinary paradigms, to dialogue rather than debate, to learn how to work in group settings, to communicate effectively within groups, to be adaptable and flexible, to foster a sense of community with their colleagues, to engage in collaborative inquiry, etc. These are experiences that can be built into the curriculum to enhance the existing graduate experiences. Students must also see these behaviors in their faculty, which ties to another avenue of change - the faculty reward structure.

Faculty are successful in their disciplines and within the university because they are good at practicing what they preach. They are disciplinary experts, rewarded for expanding the knowledge of their discipline. They are rewarded for demonstration of individual research and publication activities (Fairweather, 1996, Tierney and Bensimon, 1996). They are rewarded for national recognition in their disciplines. They are rewarded for being good at stage one attributes. Whether they have the attributes of stage two (cooperative knowledge engagement) or stage three (collaborative knowledge engagement), through traditional reward structures, faculty are rewarded most for practicing stage one behavior (expert knowledge engagement).

Changing the faculty reward structure is a much more challenging endeavor than changing the way we prepare future faculty. In the case of the interdisciplinary collaboration project studied here, one participant captured part of the conflict between a stage one reward structure and stage three engagement required for the project when observing,

> This university has a research agenda so naturally, you are going to get people who have to complete a research agenda. And they think that's their first primary goal. Well, … that can't be their primary goal for their work here on our team. … It may be something that they carry out, but they have to now carry it out under a community development agenda, which means that the community is involved in the design and the delivery of that research project. It doesn't mean that it doesn't get done. It means that the researcher is not the prime designer; he's got a team that includes the community.

Collaborative efforts take more time to be successful and often extend beyond traditional review periods. The level of activity (number of publications, research dollars, etc.) might be affected due to the level of effort required for collaboration. Also, there could be difficulty in distinguishing and accurately measuring individual contributions in a collaborative effort, as models to do so are rare, as well as finding university-wide acceptance for those measures. Of greater challenge might be developing and gaining acceptance for ways of evaluating and rewarding collaborative work that is not disaggregated to individual contribution.

Research university faculty, especially those in the tenure and promotion process, weigh carefully participation in activities that are more difficult to classify and evaluate within traditional reward structures (Blackburn & Lawrence, 1995). Outreach scholarship activity, such as the collaboration project studied here, is often considered an important element of faculty work but one that detracts from the higher status activities of teaching and research, even at land-grant institutions. Faculty personnel committees shy away from activities less objectively evaluated and offer greater rewards to traditional research activities including refereed conference presentations and journal articles (Fairweather, 1993) and solo-authored publications. It is ironic that in an institution whose primary mission is the discovery of knowledge, avenues to discovery, such as collaboration, are systemically discouraged. Yet, these are the challenges that need to be met in order to infuse a collaborative culture into academic work.

When faculty work together on projects, it is far more likely to be either a hierarchical situation (e.g., senior/junior mentoring relationship, senior researcher with research associate), or a doling out of responsibilities to be brought back to a senior analyst for compilation (what we have called cooperation), as noted by Austin and Baldwin (1992), rather than a more authentic collaboration of intellectual peers. The approach proposed for this project was unique in several respects to the research traditions of many disciplines and likely, most faculty. Although the effort was not entirely successful in creating a truly interdisciplinary experience, it did ask members to attempt to move beyond their personal research preferences and to explore the utility of interdisciplinary work and multi-method engagement/scholarship. For those who pursued their work in intellectual isolation, as they "had always done" research, the experience was often frustrating,

limiting, and did not produce expected results. For those willing to work beyond their intellectual training and spheres, there was evidence of some degree of synergy, generativity, and a sense of collective pride in the outcome – even if interdisciplinarity was not fully achieved.

Institutional Challenges of and Strategies for Interdisciplinary Faculty Work

Institutional Processes, Procedures, and Bureaucracies – The Challenges

The interdisciplinary collaboration approach highlighted, if not challenged the traditional model and assumptions of academic partnerships. In contrast to individual departmental approaches where one discipline attempts to define and intervene in solving problems, this interdisciplinary experience exposed bureaucratic rigidity and aspects of conformity for departmental and faculty role expectations. Contractual and budgetary procedures conflicted across structural lines. Similarly, how departments defined, evaluated and rewarded outreach activities (service, research, knowledge application) challenged the traditional model of research that is most highly rewarded. Faculty were asked to be knowledge collaborators (technical assistants) rather than the more familiar knowledge creators (researchers). In addition, issues of restrictions on intellectual property rights, access to data collection, publication and dissemination challenged the traditional role of researcher. These issues have strong implications for how faculty are evaluated and rewarded and thus, profoundly influence faculty decisions whether or not to participate in such projects and at what level of commitment.

Several other organizational factors affected interdisciplinary faculty work in this case example, and likely represent factors present in many inter- or intra-organizational collaborations. Among those factors deemed *structural* (Bolman & Deal, 1997) was the need to align partner bureaucracies, including budgeting, payroll, overhead return, personnel, infrastructure support and compensation, and principle investigator responsibilities that may vary from unit to unit. This can be especially problematic when crossing fiscal years, even within the same institution.

Administrative processes will likely never be reconfigured fully to the disparate needs of interdisciplinary group efforts, matrix organizations, or other creative units addressing complex problems. Bringing together the right persons who are in control of the

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right processes at the right time and creating a management structure that can best support the team efforts is a challenge that needs to be given careful planning and time for design, agreement, and negotiation. Most funded projects do not allow for this kind of time after the award is made, and it is difficult to anticipate all the pitfalls and concerns in advance of an actual award. It is clear in this study that a leader who understands the institution's management workings is an important principal player. Obviously, effective administrative and negotiating skills also aid the leader in effectively dealing with structural inhibitors.

Many of the structural inhibitors had *political* overtones as well. Power, resource allocation, ownership, and coalition building were political aspects of the interdisciplinary collaboration project common to many academic projects, and ones that required a certain kind of leader to mediate. In this instance, stage one of team development was characterized by multiple incidences of political wrangling including contract and budget negotiation, attempts by team members to exert disciplinary biases over the project definitions and strategies, interpersonal struggles for control, and testing of team norms and boundaries. These examples were fairly typical of any early team development struggles (Bolman & Deal, 1997; Morgan, 1999), and required a leader who was an effective negotiator and one who was not strongly aligned with political hot buttons (e.g., one disciplinary paradigm or another, individual team members).

Even with effective leadership, there was a need to arrive at a politically neutral construct for community engagement that all members of the team could accept. In facilitating team development along the interdisciplinary collaboration model, it seemed necessary to find a neutral intellectual space that afforded all parties a way of moving forward from dominant to parallel engagement without losing face. The guardianship concept, in this example, provided the intellectual neutral space that alluded the team in its stage one disciplinary debates, prior to its introduction, yet was necessary for the team's transition from stage one to stage two. Being aware of the potential need for and knowing how to interject or create the neutral construct or space seems a valuable leadership lesson learned from this study.

As noted, the multidisciplinary nature of the team brought its own set of human resource issues: disciplinary distinctions to be overcome, identity issues (knowledge expert, independent researcher, entrepreneurial technical assistant) to be reconciled, and

relationship and behavioral norms to be established (Bolman & Deal, 1997). Additionally, because of the cross-departmental nature of the team, internal monitoring mechanisms needed to be established since the team was less able to utilize those of the large university, such as traditional disciplinary or departmentally-based reward structures and ways of sanctioning/curtailing inappropriate behavior.

Team development and interdisciplinary collaboration, from the human resource perspective, are time-consuming experiments where process is as important as product. Actively socializing people to the team, keeping people involved and their work interconnected, and dealing effectively with the varying range and style of interpersonal interaction are process factors that, in the end, affect any kind of product quality dependent upon collective work. These factors require attention, regular communication, and on-going maintenance (Bolman and Deal, 1999; Bensimon and Neumann, 1992). Especially in a contractual situation, such as funded research, sufficient time to develop the normative and cultural infrastructure to support team functioning is often minimized if not eliminated altogether. Conflict resolution and shared decision making become less common than burying conflict and decision making apart from the group. Understanding the interpersonal side of team development, especially when disciplinary boundaries need to be crossed, is an important attribute for team leadership and for team members. Team maintenance activities that support effective processes need to be as much a focus as product delivery for all concerned.

It is interesting to note that Bohen and Stiles (1998) made similar conclusions in their research of faculty collaborative efforts at Harvard University. [Their research overlapped in time with our own research efforts.] The University realized that social problems were not going to be solved by "individuals doing primary research" within narrow disciplines, and so supported a variety of interdisciplinary collaborative efforts. Bohen and Stiles listed three primary barriers to successful faculty collaborations: academic training; reward structure; and administrative structures. All three of these barriers were affirmed in one form or another in our study.

Strategies to Support Interdisciplinary Collaboration

In some ways, by identifying challenges of interdisciplinary collaboration and considerations for addressing them, we are articulating strategies of team development.

Therefore, we will not be repetitive. Rather, two final organizational perspectives will be used to illuminate a particular set of strategies found in the data from this interdisciplinary team but heretofore not discussed.

Masland (1985) suggests that organizational culture consists of several components, including rites, rituals, ceremonies, jargon and language, stories, and myths. These cultural artifacts serve as a kind of organizational glue that holds the group together, gives a sense of identity and uniqueness, provides membership, and helps sustain the group. In the case of the study team, although it was not used very often or particularly cultivated as a leadership strategy, culture was an important consideration in team development.

Patterns of behavior and shared meanings given to actions and words are important components of organizational life. They distinguish members from non-members, ameliorate ambiguity, offer a sense of connection and intrinsic reward, and provide a sense of belonging and purpose that can carry a group through difficult times. They are also organizational aspects that require effort to cultivate and support, since meaning has to be ascribed to them and made conscious in the minds of members (Bolman & Deal, 1997; Masland, 1985). In the same way that a team is not a team because it has been labeled as such, a cultural artifact is not an aspect of normative glue just because the leader says so. But a leader can be very instrumental in shaping culture and to fostering its growth. A leader using a cultural approach to interdisciplinary collaboration and team development looks for ways to reinforce stories and myths, to use jargon and create shared language, to celebrate achievements and ritualize activities so that members regularly feel a sense of connection to a greater whole (Bolman and Deal, 1997; Tierney, 1989). As an example, socialization of new members takes on greater significance from a cultural perspective. It becomes an intentional process of reinforcing the norms and values, and opportunity to clarify mission, roles and goals, and celebrate team accomplishments, rather than a coincidental, informal happening. The project data suggest that, when it occurred, effective cultural leadership led to great strides in team development. What was also clear was that there were many missed opportunities for providing the organizational theatre (Morgan, 1999) to strengthen team functioning and enhance overall team development.

Creating an intellectual neutral space for interdisciplinary exploration is a difficult task and requires skilled leadership and attention to the structural as well as intellectual

dimensions of faculty work. Often, multidisciplinary projects originate from a single department, with other disciplinary units invited to participate. Leadership, funding, resources, and even reward structures remain within the original department and tied to the original discipline. This structure insures a competitive advantage for one unit over another. Based on this study, we strongly believe successful interdisciplinary collaborations must originate from a neutral structure within the university, removed from the confines of any one department or discipline. In the study of faculty interdisciplinary models at Harvard University, Bohnen and Stiles (1998) found that the more successful interdisciplinary collaborative projects were more independent in structure and resources than the traditional departmental structures.

The primary advantage of a structurally neutral space in the university is that it can more readily promote an intellectual neutral space for interdisciplinary group members. We also believe that the skilled leadership of an interdisciplinary team may more readily originate from a structurally neutral space. This facilitates the non-political (or at least, less political) disciplinary exploration necessary to transition toward a truly collaborative effort described in stage three.

Bohen and Stiles (1998) suggest that faculty are motivated to participate in interdisciplinary collaborations because they desire to work with colleagues/scholars in related fields to create and explore new questions, to expand beyond the confines of their discipline, and that they have a genuine desire for intellectual discourse. Universities should capitalize on these motivations and support faculty to consider interdisciplinary efforts. To do so, universities must: 1) promote interdisciplinary collaborative efforts that provide a clear vision of a compelling problem not solved by current structures and thus, requiring interdisciplinary applications; 2) promote leadership needed to bridge intellectual boundaries with the skills of an idea integrator, rapporteur, and fundraiser; 3) provide institutional commitment including administrative support, faculty leadership, physical space, stewardship to resolve tough issues (e.g. release time, incentives, administrative barriers), and new structures for the academic enterprise; 4) financial resources that allow the collaboration to act independently of other university structures; and 5) incentives and rewards for individual faculty participation in such collaboration (p. 46). We might add universities need to eliminate any disincentives for participation.

Conclusion

Traditionally, university faculty are not collaborators. They are socialized to act independently and are primarily rewarded for scholarship products arrived at through rigorous independent research. Faculty often work together in cooperative or coordinated efforts that usually mean working independently on predetermined parts of the whole and then putting the pieces together. The university and departments reward such activities less than (or at least differently than) products derived from independent research efforts. Similarly, efforts that span departments or other universities/organizations are even less understood and rewarded. Activities in conjunction with public agencies or communities are often couched in terms of service, not scholarship. Therefore, projects that partner with a state agency and a community such as the one studied here do not fall neatly within the faculty reward structure as traditionally defined.

Our experience with this project helped us to better understand the processes undertaken in paradigm clashes and interdisciplinary battles. As we noted the phases of team growth that led to our interdisciplinary collaboration model, we recognized the importance of creating a "neutral space" that allowed the team to eventually grow into the next stage. The community's guardianship idea provided the team a chance to redefine the concept and create its neutral intellectual space. The importance of a University office or unit unencumbered by traditional disciplinary or departmental structures and "modus operandi" also proved extremely important for this effort. The project would probably not have been as successful or useful had it been sponsored by a single department or discipline. Complex problems require interventions created by interdisciplinary efforts and may be well served by convening units such as University Outreach that are less associated with specific disciplinary paradigms and less political because of their broader, institutional responsibilities.

Through our observations and analyses of data, we proposed a model with three dimensions of team development and growth. [Á fourth dimension, leadership, is being developed.] While it was apparent that the study team could and did accomplish the project tasks without full growth and development on all three dimensions, we feel strongly that the full spectrum of learning is essential for the team to really develop its full potential.

Team leadership must pay attention to the three dimensions of growth and development simultaneously: disciplinary orientation, knowledge engagement, and work orientation. They affect each other and may require different approaches to leadership and development over time. The team's development must be purposeful and nurtured along these continua.

That faculty, staff and students need to approach complex problems using more complex and integrated intellectual lenses is not in question; the process by which people move individually and collectively to interdisciplinary thinking is less clear. This research presents a conceptual model of interdisciplinary collaboration development for use in understanding the evolutionary process involved as well as organizational considerations key to minimizing negative influences on the team. Attempts to understand and capture the delicate negotiations through which intellectual teams evolve, the various disciplinary, leadership, organizational and cultural factors that influence participation in such relationships, and the ultimate success or failure of such efforts are critical if we are to be able to actively promote interdisciplinary intellectual collaboration in academic work.

References

Austin, A. E. & Baldwin, R. G. (1991). *Faculty collaboration: Enhancing the quality of scholarship and teaching*. ASHE-ERIC Higher Education Report No. 7. Washington, DC: The George Washington University, School of Education and Human Development

Bartlett, K.T. (1990). *Feminist legal methods*. Harvard Law Review 103:829-888.

Bensimon, E. M. & Neumann, A. (1992). *Redesigning collegiate leadership: Teams and teamwork in higher education*. Baltimore: Johns Hopkins University Press.

Blackburn, R. T. & Lawrence, J. H. (1995). *Faculty at work: Motivation, expectation, and satisfaction*. San Francisco: Jossey-Bass.

Bogue, E.G. (1994). *Leadership by Design*. San Francisco: Jossey-Bass.

Bohen, S. J. & Stiles, J. (1998). Experimenting with models of faculty collaboration: Factors that promote their success. In S. H. Frost (Ed.), *Using Teams in Higher Education: Cultural Foundations for Productive Change*. (p. 38-56). New Directions for Institutional Research No. 100. San Francisco: Jossey-Bass.

Bolman, L. G. & Deal, T. E. (1997). *Reframing organizations: Artistry, choice and leadership*. 2nd edition. San Francisco: Jossey-Bass.

Doan, Sheila R. (1995). *The collaborative model: The effective model for the increasing interdependence of organizations*. ED 392 154.

Fairweather, J. S. (1993). Academic values and faculty rewards. *The Review of Higher Education 17*(1), 43-68.

Krasnow, M.H. (1997). *Learning to listen, talk, and trust: Constructing collaborations*. ED 408 540

Kuhnert, K.W. and P. Lewis. (1989). Transactional and transformational leadership: A constructive/developmental analysis. In W.E. Rosenbach and R.L. Taylor, (Eds.), *Contemporary Issues in Leadership*. 2nd Edition. p. 192-206. Boulder: Westview Press.

Mattesich, P. W., & Monsey, B. R. (1992). *Collaboration: What makes it work?* St. Paul, MN: Amhset Wilder Foundation.

Morgan, G. (1999). *Images of Organizations*. 2nd Edition. Beverly Hills: Sage Publications.

Nyquist, J.D.,Manning, L., Wulff, D.H., Austin,A.E., Sprague, J., Fraser, P.K., Calcagno. C. & Woodford, B. (May/June, 1999). *On the road to becoming a professor: the graduate school experience*. Change, 18-27.

Oborn, C. & Shipley, G. L. (1995). *The university and the school: A leadership model for collaborative inquiry.* Research paper presented at the 1995 Annual Mid-Western Educational Research Association Conference, Chicago, IL. ED 398 224.

Patton, M. Q. (1980). *Qualitative evaluation methods.* Newbury Park, CA: Sage.

Sandmann, L. & Flynn, M. (1997). *A model for neighborhood redevelopment through university-mediated intervention: Evaluation research plan.* Proposal for funding. East Lansing: Michigan State University.

Senge, Peter M. (1990). The fifth discipline: *The art and practice of the learning organization.* New York. Doubleday.

Strauss, A. & Corbin, J. (1991). *Basics of qualitative research: Grounded Theory procedures and techniques.* Newbury Park, CA: Sage.

Tierney, W.G., & Bensimon, E.M. (1996). *Promotion and Tenure: Community and socialization in academe.* Albany: SUNY Press.

Tjosvold, D. (1986*). The dynamics of interdependence in organizations.* Human Relations, 39, 517-540.

Trubowitz, S. L., & Longo, P. (1997*). How it works – Inside a school-college collaboration.* New York: Teachers College Press.

Tuckman, B. W. (1965). *Developmental sequence in small groups.* Psychological Bulletin (63)6: 384-89.